

15 20. (Amended) A method of separating a natural product from a biological material, the method comprising:

placing the biological material in an enclosure, the biological material containing water, the enclosure essentially free of liquid water other than the water contained in the biological material, and the enclosure free of organic solvent; releasing at least part of the natural product from the biological material by applying microwave radiation to the biological material, the microwave radiation effective to evaporate at least part of the water contained in the biological material to form water vapor and the microwave radiation effective to split the cellular structure of the biological material;

intermittently applying reduced pressure within the enclosure during the application of microwave radiation to further split the cellular structure of the biological material induced by application of the microwave radiation;

hydrodistilling the natural product by conveying the natural product and the water vapor coming from the biological material as an azeotropic mixture; and separating the natural product from the azeotropic mixture.

17 25. (Amended) The method of claim [22] 20¹⁵, wherein intermittently applying reduced pressure comprises subjecting an interior of the enclosure to a pressure-reduction cycle.

REMARKS

This Amendment is submitted in response to the Office Action dated April 19, 2000. In the Office Action, the Examiner rejected claims 1-5, 8-9, 11, and 14-32. With this Amendment, claim 22 is canceled; claims 17, 20, and 23 are amended; and no new claims are added. Upon entry of this Amendment, the above-identified application will include claims 1-5, 8-9, 11, 14-21, and 23-32.

Examiner's Comments About the Drawings

In the Office Action, the Examiner stated:

Applicant is required to submit a proposed drawing correction in reply to this Office Action. However, formal correction of the noted defect can be deferred until the application is allowed by the Examiner.

Applicant acknowledges the NOTICE OF DRAFTPERSON'S PATENT DRAWING REVIEW that was attached to the Office Action. In accordance with the Examiner's suggestion, Applicant will endeavor to provide formal drawings addressing the Examiner's comments upon allowance of the application by the Examiner. These comments are believed to adequately address the Examiner's comments about the drawings.

Examiner's Comments About the Abstract

In the Office Action, the Examiner stated:

The Abstract of the disclosure submitted with the Preliminary Amendment of 6/23/98 does not commence on a separate sheet in accordance with 37 C.F.R. 1.52(b)(1). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

As requested by the Examiner, and as indicated above, Applicant has submitted a new Abstract on a separate sheet of paper. This submission of the new Abstract is believed to adequately address the Examiner's comments about the Abstract.

Claim Rejections Under the Second Paragraph 35 U.S.C. §112

In the Office Action, the Examiner rejected claims 17 and 22-24 under the second paragraph of 35 U.S.C. §112 as allegedly "being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention." Despite this rejection, Applicants believe that claims 17, 23 and 24 are definite within the meaning of the second paragraph of 35 U.S.C. §112. Applicants note that claim 22 has been canceled.

In support of this indefiniteness rejection, the Examiner stated:

Claims 17 and 22-24 recite further method steps to the methods of the independent claims, however, it is not clear wherein the original method the additional limitations should be inserted.

Claim 17 reads as follows:

17. (Amended) The method of claim 14, and further comprising stirring the biological material during microwave irradiation of the biological material.

Claim 17 thus states that "stirring the biological material" occurs "during microwave irradiation of the biological material". Claim 17 depends from independent claim 14, which defines, in part: "subjecting the biological material to microwave irradiation" Thus, Applicants believe that claim 17 clearly specifies when "stirring the biological material" occurs in relation to other features that are defined in independent claim 14.

As noted, claim 22 has been canceled, after incorporating the details of claim 22 into claim 20. This cancellation of claim 22 occurred in the course of addressing the Examiner's §112, second paragraph, rejection of claim 22. This cancellation of claim 22 is believed to adequately address the Examiner's rejection of claim 22 under the second paragraph of 35 U.S.C. §112.

Claim 23 reads as follows:

23. (Amended) The method of claim 20, wherein intermittently applying reduced pressure comprises subjecting an interior of the enclosure to a pressure-reduction cycle.

Claim 23 merely defines in further detail the "intermittently applying reduced pressure" feature that is defined in claim 20. Thus, Applicants believe that claim 23 is definite since claim 20 specifically defines "intermittently applying reduced pressure" and since claim 23 clearly defines when the additional aspect of this intermittent application of "reduced pressure" feature occurs in relation to the other features that are defined in claim 20. Consequently, Applicants believe that claim 23 is clear and definite within the meaning of the second paragraph of 35 U.S.C. §112.

Next, claim 24 defines:

24. *The method of claim 20, the method further comprising:
heating the enclosure during at least a portion of the
microwave radiation application to compensate for a
drop in temperature resulting from evaporation of
water from the biological material.*

Claim 24 depends from independent claim 20. Independent claim 20, in part, specifies: "releasing at least part of the natural product from the biological material by applying microwave radiation" Claim 24, as indicated above, specifies heating of the enclosure "during at least a portion of the microwave radiation application" Consequently, due to this specific reference of the enclosure heating details back to a particular aspect that is defined in claim 20, it is believed that claim 24, despite the Examiner's comments to the contrary, does adequately explain how the details of claim 24 are interrelated with details that are recited in claim 20. Consequently, it is believed that claim 24 is definite and clear in accordance with the second paragraph of 35 U.S.C. §112, despite the Examiner's comments to the contrary.

Claims 17, 23, and 24 are believed allowable for the reasons provided above. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 17, 23, and 24 under the second paragraph of 35 U.S.C. §112 and that claims 17, 23, and 24 be allowed.

Claim Rejections Under 35 U.S.C. §102

In the Office Action, the Examiner rejected claims 1-5, 8, 9, 11, and 14-32 under 35 U.S.C. §102(e) as allegedly "being clearly anticipated by" U.S. Patent No. 5,884,417 to Pare (subsequently referred to as the "Pare '417" patent). Despite these comments of the Examiner, the Pare '417 patent is not a proper anticipation reference as to various features defined in claims 1-5, 8-9, 11, 14-21, or 23-32. Consequently, despite the Examiner's reliance upon the Pare '417 patent, Applicants assert that the Pare '417 patent does not, in fact, anticipate any of claims 1-5, 8, 9, 11, 14-21, or 23-32.

In support of this §102 rejection based upon the Pare '417 patent, the Examiner stated:

The claims are drawn to methods of solvent-free extraction of natural products from biological materials using microwave radiation, reduced pressure and recovery of the product. An apparatus for carrying out such methods is also claimed.

Pare, having priority under 35 U.S.C. §120 to a filing date of February 1993, discloses and claims the same methods and apparatus. See claims 1, 3, and 11, for example. Example 2, cols. 11-12 sets forth the extraction of natural products from fresh sage leaves.

Despite these comments of the Examiner, the Pare '417 patent is clearly not a proper anticipation reference under §102(e) as to various features defined in claims 1-5, 8-9, 11, 14-21, or 23-32 of the above-identified application.

Specifically, the Pare '417 patent issued from a continuation-in-part application that is ultimately based upon U.S. Patent Application Serial No. 12,475 that was filed on February 2, 1993. U.S. Patent Application Serial No. 12,475 issued as U.S. Patent No. 5,377,426 to Pare (subsequently referred to as the "Pare '426" patent). A copy of the Pare '426 patent is attached for the Examiner's review.

Applicants have prepared a Comparison of the text in the Pare '417 patent versus the text present in the Pare '426 patent. A copy of this Comparison is attached. In this Comparison, language that is present in the Pare '417 patent that *was not present* in the Pare '426 patent is underlined and is colored aqua (blue). Also, lines in the Pare '417 patent that contain aqua-colored disclosures that were not originally present in the Pare '426 patent are indicated with vertical lines in the right-hand margin of the Comparison. Finally, language that was present in the Pare '426 patent, but is not present in the Pare '417 patent is shown in ~~strikeout~~. The aqua-colored details in the attached Comparison are details in the Pare '417 patent that cannot properly be used against the features defined in the claims of the above-identified application, since these details cannot claim priority back to the February 2, 1993 filing date of the Pare '426 patent and consequently do not predate the May 11, 1993 priority date to which the above-identified application is entitled.

Applicants now direct the Examiner's attention to the claims of the above-identified application, in light of the redacted form of the Pare '417 patent. The Pare '417 patent should be redacted to **exclude** the aqua-colored details in the attached Comparison of the Pare '417 patent and the Pare '426 patent. Independent claims 1, 14, 20 and 29 each define intermittent application of pressure reduction or intermittent vacuum application. The properly redacted form of the Pare '417 patent does **not** disclose any such intermittent pressure reduction or any intermittent vacuum application, since any such details about intermittent pressure reduction or intermittent vacuum application are shown in aqua in the attached Comparison and were consequently not present in the application upon which the Pare '426 patent granted when the application for the Pare '426 application was originally filed on February 2, 1993. Consequently, the properly redacted form of the Pare '417 patent does **not**, in fact, disclose "intermittently applying reduced pressure," as required by independent claim 1, independent claim 20 and independent claim 29 and likewise does not disclose "intermittently applying a vacuum", as required by independent claim 14. Consequently, the properly redacted form of the Pare '417 patent does **not** disclose each and every feature of claim 1, claim 14, claim 20, or claim 29 and consequently does not anticipate any of claims 1, 14, 20, or 29.

Next, independent claims 1 and 31 each require heating the "enclosure during at least a portion of the microwave radiation application to compensate for the drop in temperature resulting from evaporation of water from the biological material." Once again, the properly redacted form of the Pare '417 patent does **not** disclose any such compensatory heating, since any such details about compensatory heating are shown in aqua in the attached Comparison and were consequently not present in the application upon which the Pare '426 patent granted when the application for the Pare '426 application was originally filed on February 2, 1993. Consequently, the properly redacted form of the Pare '417 patent does **not**, in fact, disclose heating of the "enclosure during at least a portion of the microwave radiation application to compensate for the drop in temperature resulting from evaporation of water from the biological material," as required by independent claims 1 and 31.

Consequently, the properly redacted form of the Pare '417 patent does **not** disclose each and every feature of claim 1 or claim 31 and consequently does not anticipate either claim 1 or claim 31.

The Examiner points to Example 2 of the Pare '417 patent, which is shown on page 14 of 22 of the Comparison. Even though very little aqua-colored material appears in Example 2 of the Comparison, Example 2 fails to disclose anything about intermittent pressure reduction or intermittent vacuum application and likewise fails to disclose anything about compensatory heating. Also, the Examiner points to claims 1 and 3 that appear on page 20 of 22 of the attached Comparison. Here, all details about intermittent pressure reduction or compensatory heating are shown in aqua and consequently are **not** entitled to the priority date of the application underlying the Pare '426 patent, despite the Examiner's allegation to the contrary. Finally, the Examiner points to claim 11, which appears on page 22 of 22 in the attached Comparison. Here, the compensatory heating means and the pressure reduction means of claim 11 in the Pare '417 patent are shown in aqua and are consequently **not** entitled to the priority date of the application underlying the Pare '426 patent.

The foregoing comments are believed to adequately demonstrate that the Pare '417 patent, as properly redacted to eliminate details not present in the February, 1993 priority application upon which the Pare '426 patent is ultimately based, does **not** disclose each and every feature of any of the independent claims of the above-identified application, including independent claims 1, 14, 20, 29, and 31. Consequently, Applicants believe that the properly redacted form of the Pare '417 patent and, consequently, the Pare '417 patent, do not anticipate any of independent claims 1, 14, 20, 29, or 31.

Claims 1, 14, 20, 29 and 31 are believed allowable. Claims 2-5, 8-9, 11, and 18-19 are also believe allowable, since claims 2-5, 8-9, 11, and 18-19 each depend from allowable claim 1. Likewise, claims 15-17 are believed allowable, since claims 15-17 each depend from allowable claim 14. Next, claim 21 and claims 23-28 are each believed allowable, since claims 21 and 23-28 each depend from allowable claim 20. Furthermore, dependent claim 30 and dependent claim 32 are each believed allowable, since claim 30 depends from allowable claim 29 and since claim 32

depends from allowable claim 31. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the rejections of claims 1-5, 8-9, 11, 14-21, and 23-32 under 35 U.S.C. §102(e) based upon the Pare '417 patent and that claims 1-5, 8-9, 11, 14-21, and 23-32 be allowed.

REMARKS

Claims 1-5, 8-9, 11, 14-21, and 23-32 are believed allowable. Consequently, Applicants respectfully request reconsideration and allowance of claims 1-5, 8-9, 11, 14-21 and 23-32.

Respectfully submitted,

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